SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING AUGUST, 1923.

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For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for April, 1920, **48**:225, and a note in the REVIEW for November, 1922, **50**:595.

From Table 1 it is seen that direct solar radiation intensities averaged below the normal values for August at Washington, D. C., and above normal at Madison, Wis., and Lincoln, Nebr. A noon intensity of 1.46 gram-calories per minute per square centimeter measured on the 24th at Madison, Wis., is the highest ever measured at that station in August.

Table 2 shows deficiencies in the radiation received from the sun and sky at all three stations, the deficiency being especially marked during the first week at Washington.

Skylight polarization measurements obtained at Washington on 11 days give a mean of 47 per cent with a maximum of 58 per cent on the 14th, At Madison measurements on 7 days give a mean of 66 per cent with a maximum of 74 per cent on the 19th. These are below average values for August at Washington, but decidedly above normal at Madison. In fact, the value obtained on the 19th is the highest ever obtained at Madison in August.

TABLE 1.—*Solar radiation intensities during August, 1923.*

[Gram-calories per minute per square centimeter of normal surface.]

Washington, D. C.

Date.	Sun's zenith distance.										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.
	75th mer. time.	Air mass.									Local mean solar time.
		A. M.					P. M.				
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Aug. 13	15.65	0.55	0.68	0.83	1.07	1.19	0.71	.....	.....	.....	11.38
14	10.21	0.61	0.71	0.83	0.99	1.27	0.98	.....	.....	.....	12.68
15	17.37	.....	.....	.....	0.63	1.19	.....	.....	.....	.....	11.38
16	11.81	.....	.....	.....	.....	0.90	.....	.....	.....	.....	12.68
20	13.61	.....	.....	.....	.....	1.09	0.98	.....	.....	.....	11.81
21	16.20	.....	.....	.....	.....	1.20	.....	.....	.....	.....	17.96
22	9.47	.....	.....	.....	.....	.....	1.20	.....	.....	.....	8.18
24	10.97	.....	.....	.....	.....	1.06	.....	.....	.....	.....	7.87
25	12.68	.....	.....	.....	0.98	1.32	.....	.....	.....	.....	9.47
30	13.61	.....	0.40	0.55	0.81	1.00	.....	.....	.....	.....	16.20
31	15.11	.....	.....	.....	0.55	0.82	.....	.....	.....	.....	12.68
Means	.....	(0.58)	0.60	0.74	0.84	1.10	0.97	.....	.....	.....	.....
Departures	.....	−0.04	−0.04	−0.01	−0.07	−0.12	−0.02	.....	.....	.....	.....

* Extrapolated.

TABLE 1.—*Solar radiation intensities during August, 1923*—Continued.

Madison, Wis.

Date.	Sun's zenith distance.										
	8 a.m.	18.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.0°	75.7°	18.7°	Noon.
	75th mer. time.	Air mass.									Local mean solar time.
		A. M.					P. M.				
	e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Aug. 17	10.59	.....	.....	.....	1.00	1.28	.....	.....	.....	.....	10.97
18	10.97	.....	.....	.....	.....	1.30	.....	.....	.....	.....	11.81
19	10.97	.....	.....	.....	1.22	1.40	.....	.....	.....	.....	10.21
22	7.04	.....	.....	.....	1.20	.....	.....	.....	.....	.....	7.29
23	7.87	.....	.....	0.90	1.13	1.41	1.13	.....	.....	.....	6.50
24	7.29	.....	.....	1.09	1.31	1.49	1.30	.....	.....	.....	10.59
29	9.14	.....	.....	.....	1.06	.....	.....	.....	.....	.....	10.59
30	12.68	.....	.....	.....	.....	1.40	.....	.....	.....	.....	14.60
Means	.....	.....	.....	(1.00)	1.15	1.38	(1.22)	.....	.....	.....	.....
Departures	.....	.....	.....	+0.07	+0.06	+0.07	+0.18	.....	.....	.....	.....

Lincoln, Nebr.

Aug. 10	17.37	.....	.....	.....	.....	.....	1.01	0.91	0.79	0.69	18.59
11	15.65	.....	0.80	0.97	1.16	1.35	.....	.....	.....	.....	17.37
12	14.10	.....	.....	.....	.....	.....	.....	1.01	0.88	.....	13.13
13	14.88	.....	.....	1.02	1.21	1.45	1.13	0.93	0.79	0.69	14.10
14	17.37	.....	0.83	0.92	1.13	1.27	.....	.....	.....	.....	20.57
22	7.04	.....	0.93	1.05	1.22	.....	.....	.....	.....	.....	7.29
24	9.14	.....	0.74	1.01	.....	.....	.....	.....	.....	.....	8.48
25	1.38	.....	.....	.....	.....	.....	1.02	.....	.....	.....	13.13
Means	.....	.....	.....	0.82	0.99	1.18	1.36	1.05	0.95	0.82	(0.69)	.....
Departures	.....	.....	.....	+0.03	+0.09	+0.10	+0.08	−0.03	+0.06	+0.06	−0.02	.....

TABLE 2.—*Solar and sky radiation received on a horizontal surface.*

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
	cal.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
July 30	279	438	462	−188	−34	−73	−3,360	+676	−1,235
Aug. 6	395	420	388	−61	−36	−128	−3,788	+424	−2,128
13	451	492	489	+13	+51	−4	−3,694	+780	−1,158
20	487	427	530	+69	+4	+55	−3,213	+811	−1,773
27	406	291	439	−1	−111	−19	−3,223	+34	−1,907